IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

TELIMAA et al Atty. Ref.: **2747-8**

Serial No. **10/590,382** Group: **2856**

Filed: **June 20, 2007** Examiner: **Shabman**

For: **CALIBRATION PIPETTE**

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October 17, 2008

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPLICANTS' BRIEF ON APPEAL

Sir:

This Appeal is from the Official Action dated July 22, 2008, finally rejecting claims 10-21 presently pending herein.[1] As will become evident from the following discussion, the Examiner's rejections are in error and, as such, reversal of the same is solicited.

[1] The claims on appeal appear in the Section VIII Claims Appendix accompanying this Brief.

I. Real Party In Interest

The real party in interest is the owner of the subject application, namely Thermo Electron Oy.

II. Related Appeals and Interferences

No known appeals and/or interferences are pending that are related to the subject application.

III. Status of Claims

A. The following claims are presently pending in this application: Claims 10-21.

B. The following claims are the claims on appeal and have been rejected in the Examiner's "final" Official Action of July 22, 2008: Claims 10-21.

C. The following claims have been cancelled during prosecution to date: Claims 1-9.

D. The following claim(s) have been allowed: None

E. The following claims have been withdrawn: None

F. The following claims have been objected to: None

IV. Status of Amendments

An amendment was filed on October 16, 2008, wherein a typographical error in claim 21 was corrected (i.e., changing the last word in the claim from "present" to –preset--) and a reference numeral in claim 14 was deleted. Since such an amendment places claims 14 and 21 in better form for appeal, its entry under 35 USC §1.116 has been presumed for the purpose of this brief.

V. Summary of Claimed Subject Matter[2]

1.. Independent claim 10

The invention as defined by independent claim 10 is directed toward a calibration pipette comprising:

a piston in a cylinder actuated by a motor and means for moving the piston over a distance such that a given liquid dosing volume is aspirated into or dispensed out of the pipette (page 1, lines 14-24),

a control system (10, Fig. 2 and page 6, lines 23-34),

a user interface (1, 2, Fig. 1 and page 5, lines 26-27 and page 7, lines 3-4),

an electronic display in which the dosing volume is indicated (3, Fig. 1 and page 5, line 27), and

a calibration function (Figs. 3 and 4, and page 6, line 36 through page 7, line 33), wherein

the calibration function is such that at least one real volume obtained with an indicated volume is input via the user interface into the control system and that the control system calculates calibration settings based on the input and stores them in a memory (page 3, lines 18-20 and page 7, lines 3-13), by means of which settings the stroke length of the piston or the volume indicated on the display is corrected so that the volume indicated on the display equals the real dosing volume (page 3, lines 20-24 and page 7, lines 15-16), and wherein

the calibration resolution is less than 0.05 % (page 4, lines 18-21).

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[2] The numbers in parenthesis refer to the reference page and line numbers of the originally filed specification and/or if appropriate, the reference numeral and drawing figure as originally filed.

2. Independent claim 17

The invention defined by independent claim 17 is directed towards a system for controlling a calibration pipette, the pipette comprising:

a piston actuated in a cylinder and a motor for actuating the piston over a distance such that a given liquid dosing volume is aspirated or dispensed out of the pipette (page 1, lines 14-24),

a user interface (1, 2, Fig. 1 and page 5, lines 26-27 and page 7, lines 3-4),

an electronic display in which the dosing volume is indicated (3, Fig. 1 and page 5, line 27), and

a calibration function (Figs. 3 and 4, and page 6, line 36 through page 7, line 33), wherein

the calibration function is such that real at least one volume obtained with indicated volume is input over the user interface into the control system and that the control system calculates calibration settings based on the input and stores them in a memory (page 3, lines 18-20 and page 7, lines 3-13), by means of which settings the stroke length of the piston or the volume indicated on the display is corrected so that the volume indicated on the display equals the real dosing volume (page 3, lines 20-24 and page 7, lines 15-16), and wherein

the calibration resolution is less than 0.1 % (page 4, lines 18-21), and wherein

the calibration function comprises input of the real volumes obtained with at least two indicated volumes (page 4, lines 31 through page 5, line 2 and Fig. 4).

3. Independent claim 18

The invention defined by independent claim 18 is directed toward a method for calibrating a pipette, the pipette comprising:

a piston actuated in a cylinder, a motor for actuating the piston over a distance such that a given liquid dosing volume is aspirated or dispensed out of the pipette (page 1, lines 14-24), and means for changing the dosing volume (2, 7, 8, 9, Fig. 1 and page 7, lines 4-6 and lines 22-24),

a control system (10, Fig. 2 and page 6, lines 23-34),

a user interface (1, 2, Fig. 1 and page 5, lines 26-27 and page 7, lines 3-4),

an electronic display, in which the dosing volume is indicated (3, Fig. 1 and page 5, line 27), wherein

the real volumes obtained with at least two indicated volumes are input via the user interface into the control system, the control system being allowed to calculate calibration settings on these real volumes and to store them in a memory (page 3, lines 18-20 and page 4, line 31 through page 5, line 2), by means of which calibration settings the control system corrects the stroke length of the piston or the volume indicated on the display so that the volume indicated on the display equals the real dosing volume (page 3, lines 20-24 and page 7, lines 15-16), and wherein

the calibration resolution is less than 0.1 % (page 4, lines 18-21), and wherein

the control system allows storage of a plurality of calibration settings in parallel, so that the settings corresponding to the current pipetting function can be selected for use each time (page 5, lines 4-12).

4. Independent claim 21

The invention defined by independent claim 21 is directed towards a calibration pipette comprising:

a piston in a cylinder actuated by a motor and means for moving the piston over a distance such that a given liquid dosing volume is aspirated into or dispensed out of the pipette (page 1, lines 14-24),

a control system (10, Fig. 2 and page 6, lines 23-34),

a user interface (1, 2, Fig. 1 and page 5, lines 26-27 and page 7, lines 3-4),

an electronic display in which the dosing volume is indicated (3, Fig. 1 and page 5, line 27), and

a calibration function (Figs. 3 and 4, and page 6, line 36 through page 7, line 33), wherein

the calibration function is such that at least one real volume obtained with an indicated volume is input via the user interface into the control system and that the control system calculates calibration settings based on the input and stores them in a memory (page 3, lines 18-20 and page 7, lines 3-13), by means of which settings the stroke length of the piston or the volume indicated on the display is corrected so that the volume indicated on the display equals the real dosing volume (page 3, lines 20-24 and page 7, lines 15-16), and wherein

the calibration resolution is less than 0.1 % (page 4, lines 18-21), and wherein

the control system calculates the calibration settings on the basis of one input volume only assuming that the real volume is in linear dependence with the set volume, the angular coefficient of the linear equation having been preset (page 4, lines 23-27).

VI. Grounds of Rejection to be Reviewed on Appeal

The following rejection was advanced in the final Official Action dated July 22,2008:

1. Claims 10-21 stand rejected under 35 USC §103(a) as allegedly being unpatentable over Kriz (US 2002/0005075) in view of the "admitted prior art" in the background of the invention.

VII. Arguments

1. Claims 10-21 are patentable over Kriz.

Applicants note that one important feature of the present invention is that the calibration resolution is less than 0.1 % (preferably less than 0.05% and more preferably less than 0.01%). Resolution means here the ratio of the precision of the measured volume to the target volume. For example, if the target volume is 100 µl, and the measured volume is fed by the precision of 0.1 µl (e.g. 100.1 µl) the resolution is 0.1 %. In practice the present invention is accomplished so that during the calibration the volume is fed with higher precision (i.e. with more numbers) than shown in the display during pipetting. It is understandable that the set pipetting volume must not be displayed with higher precision than is actually achieved.[3]

Turning attention to the applied reference of record, applicants note that Kriz et al indeed describe a calibration system into which the measured volume is fed. The system of Kriz et al then computes the calibration factor (see ¶ [0030]), i.e. the angular coefficient of the calibration equation (see page 1, line 36 of the present application). However, the measured volume is fed with the same precision, 0.1 µl, as the volume is shown when pipetting. The calibration is carried out in Kriz et al at a single point only. The only exemplified calibration volume is 100 µl (¶ [0033]). When the measured volume is fed by the precision of 0.1 µl, the calibration resolution is then 0.1 %. Significantly the maximum volume of the pipette has not been disclosed by Kriz et al. The volume is in any case at least 123.4 µl.

An old and well known pipette manufacturer, Brand GmbH, markets a 200 µl pipette in which the volume is displayed with the precision of 0.2 µl (see page 2, lines

[3] Applicants note that the description in the specification on page 4 lines 21-23 is meant to refer to the best possible resolution, which would be achieved in the ultimately rare situation that the calibration is carried out at the maximum volume. Applicants consider that a person skilled in the art would readily understand what is meant by such passage, especially in view of page 2 line 23 and page 7 lines 32-33.

22-23 of the present application). This precision is of course because better accuracy is not achieved. As already mentioned, it is not allowable to display the volume with a higher precision than is actually achieved. So, one may well assume that the maximum volume of the Kriz et al pipette is 200 µl. A pipette is calibrated about the median of the volume range, which in the case of the exemplified calibration volume, would be 100 µl. This indicates that the volume range is 0-200 µl. The best calibration resolution available would thus be 0.05 %. The pipette of Kriz et al would then however be used *only* at the maximum volume.

Kriz et al do not disclose anything at all about the correction factor (constant 2 in the calibration equation), so this must be preset in the Kriz et al pipette. When the minimum volume is zero, the factor is probably simply assumed to be zero also.

In principle the pipette of Kriz et al corresponds to that of Brand GmbH's discussed in the originally filed specification with the difference that latter presets the angular coefficient. Accordingly, Kriz et al. do not disclose or suggest at least a calibration resolution *less than 0.05 %*.

Furthermore, applicants note that Kriz et al do not disclose or suggest a single point calibration in which the correction factor is preset. And Kriz et al do not disclose or suggest a system in which *two volumes* are measured and fed in the calibration (two point calibration).

The Examiner's interpretation of Kriz et al in view of claim 14 is suggested to be in error on this point. Specifically, Kriz et al in ¶ [0034] merely describe the normal procedure in which several portions are measured and their average is then used as the volume to be fed into the system.

Furthermore while Kriz et al do indeed describe that preset volumes can be stored in order to provide quick selection possibilities, the storing of *different* calibration

settings is not suggested. On the contrary, Kriz et al describe another method in which the calibration coefficient can be changed if desired (see ¶ [0030]).

Applicants note the following additional following comments in reply to certain statements in the final Official Action dated July 22, 2008:[4]

- The Examiner mentions on page 3, lines 3-4 that calibration factor of 0.997 would correspond to a "resolution factor" of 0.03%. Further on page 6, lines 2-3, the Examiner notes "...however depending on how precise the measurement need to be, any number could be chosen including 0.05% or 0.01%." (See also page 9, lines 17-18). Applicants respectfully cannot understand what the Examiner means from such passages and how he obtains the asserted "resolution factor" of 0.03% or any of his other numbers. The calibration factor is, indeed, the angular coefficient of the calibration equation. It is indisputable that Kriz inputs the calibration volume *at the same precision* as the volume is displayed during the actual pipetting. No other way is suggested in Kriz. Thus, these comments appear to be impermissible speculation on the part of the Examiner which cannot take the place of the presented facts.[5]

- On page 3, second paragraph, the Examiner concludes that it would have been "obvious" to increase the precision as desired and thus, e.g., to use the precision of 0.2 µl also for 1000 µl pipettes. This is most certainly *not* the case. No pipette manufacturer would ever allege to achieve such a precision. The precision used in such pipettes is at most 1 µl. Such a pipette should be calibrated at the volume of 500 µl , whereby the

[4] All citations are to the final Official Action dated July 22, 2008.

[5] *See, In re Katzaschmann*, 146 USPQ 66 (CCPA 1965).

calibration resolution is 0.2%. If the pipette were calibrated at 1000 µl (which would not make much sense), the resolution would be 0.1%.

- On page 2, paragraph 2, the Examiner asserts that the specification does not disclose how a resolution of 0.1%, 0.05% or 0.01% is achieved over the prior art methods. This statement apparently underscores the misunderstandings the Examiner has with regard to the present invention. Simply stated, the specification is entirely enabling as to how calibration resolutions can be achieved, namely: The calibration volume is fed with greater precision than the pipetting volume is shown during the actual use of the pipette.

- Greater precision is naturally always desirably beneficial. However, just because some attribute may be highly desirable does not mean that it is statutorily "obvious". In this particular instance, the display must never give the impression of greater precision than what is actually being achieved. Electrical pipettes have been in wide use for at least the past 20 years, but no one has proposed the solutions achieved by the present invention in terms of greater precision.

- According to claim 14, at least two volumes are input. This aspect of the present invention is most definitely *not* disclosed or suggested by Kriz. Instead Kriz inputs only one volume, which as is usual has been obtained as an *average* of several measurements. The advantage of the embodiment defined by pending claim 14 is that the user can conduct the two point calibration.

- With regard to the comments regarding claim 20 on page 8, last paragraph, it appears that the Examiner has misread the description on page 2, lines 14-20 of the originally filed specification. Specifically, in the

therein disclosed Transferpipette® Easy Calibration™ system, the angular coefficient is *not* recalculated when the pipette is recalibrated. Only single point recalibration can be made by the user.

- As to claim 16, applicants note that Kriz do not disclose or suggest to have *different* calibrations settings. On the contrary, Kriz only disclosed that preset volumes can be stored in order to provide quick selection possibilities. Storage of preset volumes as suggested by Kriz is quite different than the storage of *different calibration settings* in accordance with the present invention.

2. Conclusion.

For the reasons advanced, the Examiner's rejections of the pending claims herein are in error and must be reversed. Such favorable action is solicited.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1 - 9. (canceled)

10. (previously presented) A calibration pipette comprising:

a piston in a cylinder actuated by a motor and means for moving the piston over a distance such that a given liquid dosing volume is aspirated into or dispensed out of the pipette,

a control system,

a user interface,

an electronic display in which the dosing volume is indicated, and

a calibration function, herein

the calibration function is such that at least one real volume obtained with an indicated volume is input via the user interface into the control system and that the control system calculates calibration settings based on the input and stores them in a memory, by means of which settings the stroke length of the piston or the volume indicated on the display is corrected so that the volume indicated on the display equals the real dosing volume, and wherein

the calibration resolution is less than 0.05 %.

11. (previously presented) A pipette as defined in claim 10, in which the control system corrects the stroke length of the piston by means of the calibration settings.

12. (previously presented) A pipette as defined in claim 10, comprising a motor for actuating the piston.

13. (previously presented) A pipette as defined in claim 10, in which the dosing volume is adjustable.

14. (previously presented) A pipette as defined in claim 13, in which the calibration function comprises input of the real volumes obtained with at least two indicated volumes.

15. (previously presented) A pipette as defined in claim 14, in which the control system calculates the calibration settings assuming that the real volume is in linear dependence with the set volume.

16. (previously presented) A pipette as defined in claim 10, in which the control system is such that allows storage of a plurality of calibration settings in parallel, so that the settings corresponding to the current pipetting function can be selected for use each time.

17. (previously presented) A system for controlling a calibration pipette, the pipette comprising:

a piston actuated in a cylinder and a motor for actuating the piston over a distance such that a given liquid dosing volume is aspirated or dispensed out of the pipette,

a user interface,

an electronic display in which the dosing volume is indicated, and

a calibration function, wherein

the calibration function is such that real at least one volume obtained with indicated volume is input over the user interface into the control system and that the control system calculates calibration settings based on the input and stores them in a memory, by means of which settings the stroke length of the piston or the volume indicated on the display is corrected so that the volume indicated on the display equals the real dosing volume, and wherein

the calibration resolution is less than 0.1 %, and wherein

the calibration function comprises input of the real volumes obtained with at least two indicated volumes.

18. (previously presented) A method for calibrating a pipette, the pipette comprising:
a piston actuated in a cylinder, a motor for actuating the piston over a distance such that a given liquid dosing volume is aspirated or dispensed out of the pipette, and means for changing the dosing volume,
a control system,
a user interface,
an electronic display, in which the dosing volume is indicated, wherein
the real volumes obtained with at least two indicated volumes are input via the user interface into the control system, the control system being allowed to calculate calibration settings on these real volumes and to store them in a memory, by means of which calibration settings the control system corrects the stroke length of the piston or the volume indicated on the display so that the volume indicated on the display equals the real dosing volume, and wherein
the calibration resolution is less than 0.1 %, and wherein
the control system allows storage of a plurality of calibration settings in parallel, so that the settings corresponding to the current pipetting function can be selected for use each time.

19. (previously presented) A pipette as defined in claim 10, wherein the calibration resolution is less than 0.01 %.

20. (previously presented) A pipette as defined in claim 14, in which the calibration function comprises input of the real volumes obtained with two indicated volumes.

21. (previously presented) A calibration pipette comprising:

a piston in a cylinder actuated by a motor and means for moving the piston over a distance such that a given liquid dosing volume is aspirated into or dispensed out of the pipette,

a control system,

a user interface,

an electronic display in which the dosing volume is indicated, and

a calibration function, wherein

the calibration function is such that at least one real volume obtained with an indicated volume is input via the user interface into the control system and that the control system calculates calibration settings based on the input and stores them in a memory, by means of which settings the stroke length of the piston or the volume indicated on the display is corrected so that the volume indicated on the display equals the real dosing volume, and wherein

the calibration resolution is less than 0.1 %, and wherein

the control system calculates the calibration settings on the basis of one input volume only assuming that the real volume is in linear dependence with the set volume, the angular coefficient of the linear equation having been preset.

IX. EVIDENCE APPENDIX

[NONE]

X. RELATED PROCEEDINGS APPENDIX

[NONE]

XI. CERTIFICATE OF SERVICE

[NOT APPLICABLE]